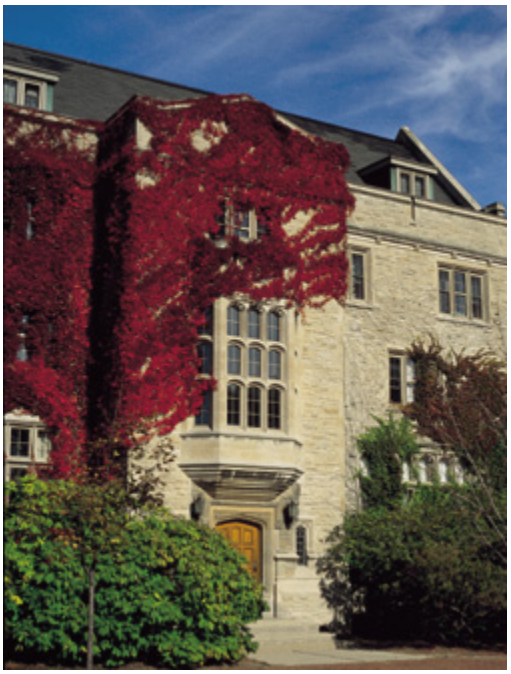
2005-2006 Undergraduate Calendar



The information published in this Undergraduate Calendar outlines the rules, regulations, curricula, programs and fees for the 2005-2006 academic year, including the Summer Semester 2005, the Fall Semester 2005 and the Winter Semester 2006.

For your convenience the Undergraduate Calendar is available in PDF format.

If you wish to link to the Undergraduate Calendar please refer to the Linking Guidelines.

The University is a full member of:

- The Association of Universities and Colleges of Canada

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Revision Information:	
February 1, 2005	Initial Publication
February 28, 2005	Second Publication
April 8, 2005	Third Publication
May 20, 2005	Fourth Publication
July 19, 2005	Fifth Publication
September 28, 2005	Sixth Publication
October 18, 2005	Seventh Publication

Disclaimer

University of Guelph 2005

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The University reserves the right to change without notice any information contained in this calendar, including any rule or regulation pertaining to the standards for admission to, the requirements for the continuation of study in, and the requirements for the granting of degrees or diplomas in any or all of its programs. The publication of information in this calendar does not bind the University to the provision of courses, programs, schedules of studies, or facilities as listed herein.

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In the event of a discrepancy between a print version (downloaded) and the Web version, the Web version will apply,

Published by: Undergraduate Program Services

Editor: A.H. Goody, Associate Registrar

Assistant Editor: S.Holley, Program Co-ordinator

Table of Contents

Bachelor of Science in Technology [B.Sc.(Tech.)]

The B.Sc.(Tech.) program was designed for students who do not intend to pursue post-graduate studies and are strongly focused on securing industrial employment that makes use of the knowledge acquired in their bachelors degree. This program provides students with the knowledge and skills deemed to be essential by employers and exemplifies the positive benefits of cooperation between colleges and universities. The program combines rigorous theory with practical applications.

For the B.Sc.(Tech.) degree the University offers an honours program requiring the equivalent of 8 semesters of successful full-time study. Two of the semesters will be located at Seneca College in Toronto. The program requires the completion of four co-op work-terms. Students are encouraged to study full-time and to follow the schedule of studies listed below. In the B.Sc.(Tech.) program, 2.50 credits per semester is the normal load for a regular full-time student.

Program Information

Students are required to follow the pattern of study for one of the two majors offered (Applied Pharmaceutical Chemistry or Physics and Technology) and complete all of the required courses specified in the Schedule of Studies.

Courses taught by Seneca College are noted in the schedule of studies. The course descriptions are in this calendar however detailed course profiles can be accessed through the Seneca College home page.

Entry Credits

In general, the 4U or OAC credit or its equivalent is required in a subject area to allow entrance to the initial university course. Students who lack this requirement can remedy the deficiency by successful completion of:

BIOL*1020 for students lacking biology

CHEM*1060 for students lacking chemistry

PHYS*1020 for students lacking in physics

Not more than one of the above will be allowed for credit toward the B.Sc.(Tech.) degree.

Continuation of Study

Students are advised to consult the University's regulations for continuation of study which are outlined in detail in Section VIII--Undergraduate Degree Regulations & Procedures. In addition to the University regulations, students will also be required to achieve a 70% cumulative average by the end of semester 2 due to the required co-op component within this program. Students will be evaluated after semester 2 and those students who have a cumulative average less than 70% but meet the Guelph continuation of study requirements will be withdrawn from the B.Sc.(Tech.) program. Under these circumstances, students in the Applied Pharmaceutical Chemistry major will be automatically moved to B.Sc. Biological Chemistry and those students in the Physics and Technology major will be automatically moved to the B.Sc. Physics major. Students should contact their Program Counsellor regarding co-op appeal procedures.

Note: Students who voluntarily withdraw from co-op will be moved to the B.Sc. majors specified above.

Honours Minors

Students may wish to add a minor to their major. A minor is a group of courses which provides for exposure to and mastery of the fundamental principles of a subject. A minor consists of a minimum of 5.00 credits. It may also require certain specified courses. Given the intended technical training of this degree, students have very little flexibility in terms of electives. As such, students wishing to add a minor would be required to enrol in additional semesters of study. Students wishing to take a minor should consult with their program counsellor.

Conditions for Graduation

In order to qualify for graduation from the B.Sc.(Tech.) program, the student must have successfully completed all of the courses approved for the program, achieved a 60%, or higher, cumulative average and received a minimum grade of satisfactory for the co-op work reports and work performance evaluations.

Applied Pharmaceutical Chemistry (APPC:C)

Department of Chemistry, College of Physical and Engineering Science

Major (Honours Program)

This major will require the completion of 20.25 credits as indicated below:

Semester 1 - Fall

BIOL*1030	[0.50]	Biology I
CHEM*1040	[0.50]	General Chemistry I
MATH*1200	[0.50]	Calculus I
PHYS*1000	[0.50]	An Introduction to Mechanics
XSEN*2010	[0.50]	Effective Business and Technical Writing

Semester 2 - Winter

BIOL*1040	[0.50]	Biology II
CHEM*1050	[0.50]	General Chemistry II
COOP*1100	[0.00]	Introduction to Co-operative Education
MATH*1210	[0.50]	Calculus II
PHYS*1010	[0.50]	Introductory Electricity and Magnetism

0.50 credit from an Arts/Social Science elective

Semester 3 - Fall

CHEM*2060	[0.50]	Structure and Bonding
CHEM*2400	[0.75]	Analytical Chemistry I
CHEM*2880	[0.50]	Physical Chemistry
CIS*1200	[0.50]	Introduction to Computing
STAT*2040	[0.50]	Statistics I

Winter Semester

COOP*1000	[0.00]	Co-op Work Term I

Semester 4 - Summer

BIOC*2580	[0.50]	Introductory Biochemistry
CHEM*2070	[0.50]	Structure and Spectroscopy
CHEM*2700	[0.50]	Organic Chemistry I
MICR*2030	[0.50]	Microbial Growth

0.50 elective

Fall Semester

COOP*2000	[0.00]	Co-op Work Term II

Semester 5 - Winter

XSEN*2020	[0.50]	Management Studies: Business and Human Relations
XSEN*3020	[0.50]	Pharmaceutical Analysis
XSEN*3030	[0.50]	Pharmacology and Applied Toxicology
XSEN*3040	[0.50]	Occupational Health and Chemistry
XSEN*4050	[0.50]	Biopharmaceuticals

Note: All courses in Semester 5 are taught at Seneca College in Toronto.

Semester 6 - Summer

BIOC*3570	[0.50]	Analytical Biochemistry
CHEM*3360	[0.50]	Environmental Chemistry and Toxicology
CHEM*3430	[0.50]	Analytical Chemistry II: Instrumental Analysis
CHEM*3750	[0.50]	Organic Chemistry II

0.50 elective

Fall Semester

COOP*3000	[0.00]	Co-op Work Term III

Semester 7 - Winter

XSEN*3060	[0.50]	Pharmaceutical Analysis - Advanced
XSEN*4010	[0.50]	Pharmaceutical Calculations
XSEN*4020	[0.50]	Pharmaceutical Organic Chemistry
XSEN*4030	[0.50]	Pharmaceutical Product Formulations
XSEN*4040	[0.50]	Pharmaceutical Manufacturing

Note: All courses in Semester 7 are taught at Seneca College in Toronto.

Summer Semester

COOP*4000	[0.00]	Co-op Work Term IV

Semester 8 - Fall

CHEM*3440	[0.50]	Analytical Chemistry III: Analytical Instrumentation
CHEM*4730	[0.50]	Synthetic Organic Chemistry

One of:

BIOC*4520	[0.50]	Metabolic Processes
BIOC*4550	[0.50]	Biochemistry and Structure of Macromolecules
BIOC*4570	[0.50]	Applied Biochemistry
CHEM*3640	[0.50]	Chemistry of the Elements I

One of:

BIOM*3100	[0.50]	Mammalian Physiology I
HK*3940	[1.25]	Human Physiology
MBG*2000	[0.50]	Introductory Genetics
PATH*3610	[0.50]	Principles of Disease

0.50 elective

Physics and Technology (PHTC:C)

Department of Physics, College of Physical and Engineering Science.

Major (Honours Program)

Two streams are available. Stream A is different from Stream B in that Stream B offers a double work term following academic semester 6. This major will require the completion of 21.00 credits as indicated below:

Stream A

Semester 1 - Fall

BIOL*1030	[0.50]	Biology I
CHEM*1040	[0.50]	General Chemistry I
CIS*1500	[0.50]	Introduction to Programming
MATH*1200	[0.50]	Calculus I
PHYS*1000	[0.50]	An Introduction to Mechanics

Semester 2 - Winter

CIS*2500	[0.50]	Intermediate Programming
COOP*1100	[0.00]	Introduction to Co-operative Education

MATH*1210 [0.50] Calculus II
PHYS*1010 [0.50] Introductory Electricity and Magnetism
PHYS*2040 [0.50] Fundamental Electronics and Sensors
One of:
CIS*1910 [0.50] Discrete Structures in Computing I *
0.50 elective
* CIS*1910 is a prerequisite for many upper level C.I.S. courses

Semester 3 - Fall

MATH*2160 [0.50] Linear Algebra I
MATH*2200 [0.50] Advanced Calculus I
PHYS*2440 [0.75] Mechanics I
PHYS*2460 [0.75] Electricity and Magnetism I
One of:
CIS*2030 [0.50] Structure and Application of Microcomputers
CIS*2910 [0.50] Discrete Structures in Computing II
0.50 elective

Winter Semester

COOP*1000 [0.00] Co-op Work Term I

Semester 4 - Summer

MATH*2170 [0.50] Differential Equations I
PHYS*2260 [0.50] Experimental Basis of Quantum Physics
PHYS*3240 [0.50] Statistical Physics I
STAT*2040 [0.50] Statistics I
One of:
CIS*2030 [0.50] Structure and Application of Microcomputers
CIS*2100 [0.50] Scientific Computing and Applications Development
CIS*2520 [0.50] Data Structures
CIS*3120 [0.50] Digital Systems

Fall Semester

COOP*2000 [0.00] Co-op Work Term II

Semester 5 - Winter

XSEN*3100 [0.50] Analog and Digital Communications
XSEN*3120 [0.50] Microprocessors I
XSEN*3130 [0.50] Object Oriented Programming Using C++
XSEN*3140 [0.50] Operating Systems
XSEN*4130 [0.50] Networking Essentials
Note: All courses in Semester 5 are taught at Seneca College in Toronto.

Summer Semester

COOP*3000 [0.00] Co-op Work Term III

Semester 6 - Fall

XSEN*4100 [0.50] Event Driven Programming and Visual Basic
XSEN*4110 [0.50] Data Acquisition and Control
XSEN*4120 [0.50] Data Communications I
XSEN*4140 [0.50] Technical and Personal Communications
One of:
XSEN*4150 [0.50] Microprocessors II
XSEN*4160 [0.50] Computer Peripheral Systems

Semester 7 - Winter

PHYS*2450 [0.75] Mechanics II
PHYS*2470 [0.75] Electricity and Magnetism II
PHYS*3220 [0.50] Waves and Optics
One of:
CIS*3120 [0.50] Digital Systems
0.50 elective
0.50 elective

Summer Semester

COOP*4000 [0.00] Co-op Work Term IV

Semester 8 - Fall

MATH*3100 [0.50] Differential Equations II
PHYS*3230 [0.50] Quantum Mechanics I
PHYS*4240 [0.50] Statistical Physics II
PHYS*4500 [0.50] Advanced Physics Laboratory
0.50 elective

Note: At least 0.50 in electives must be taken from courses in the Arts or Social Sciences.

Stream B

Semester 1 - Fall

BIOL*1030 [0.50] Biology I
CHEM*1040 [0.50] General Chemistry I
CIS*1500 [0.50] Introduction to Programming
MATH*1200 [0.50] Calculus I
PHYS*1000 [0.50] An Introduction to Mechanics

Semester 2 - Winter

CIS*2500 [0.50] Intermediate Programming
COOP*1100 [0.00] Introduction to Co-operative Education
MATH*1210 [0.50] Calculus II
PHYS*1010 [0.50] Introductory Electricity and Magnetism
PHYS*2040 [0.50] Fundamental Electronics and Sensors
One of:
CIS*1910 [0.50] Discrete Structures in Computing I *
0.50 elective
*CIS*1910 is a prerequisite for many upper level C.I.S. courses

Semester 3 - Fall

MATH*2160 [0.50] Linear Algebra I
MATH*2200 [0.50] Advanced Calculus I
PHYS*2440 [0.75] Mechanics I
PHYS*2460 [0.75] Electricity and Magnetism I
One of:
CIS*2030 [0.50] Structure and Application of Microcomputers
CIS*2910 [0.50] Discrete Structures in Computing II
0.50 elective

Winter Semester

COOP*1000 [0.00] Co-op Work Term I

Semester 4 - Summer

MATH*2170 [0.50] Differential Equations I
PHYS*2260 [0.50] Experimental Basis of Quantum Physics
PHYS*3240 [0.50] Statistical Physics I
STAT*2040 [0.50] Statistics I
One of:
CIS*2030 [0.50] Structure and Application of Microcomputers
CIS*2100 [0.50] Scientific Computing and Applications Development
CIS*2520 [0.50] Data Structures
CIS*3120 [0.50] Digital Systems

Semester 5 - Fall

XSEN*3100 [0.50] Analog and Digital Communications
XSEN*3120 [0.50] Microprocessors I
XSEN*3130 [0.50] Object Oriented Programming Using C++
XSEN*3140 [0.50] Operating Systems
XSEN*4130 [0.50] Networking Essentials
Note: All courses in Semester 5 are taught at Seneca College in Toronto.

Semester 6 - Winter

XSEN*4100 [0.50] Event Driven Programming and Visual Basic
XSEN*4110 [0.50] Data Acquisition and Control
XSEN*4120 [0.50] Data Communications I
XSEN*4140 [0.50] Technical and Personal Communications
One of:
XSEN*4150 [0.50] Microprocessors II
XSEN*4160 [0.50] Computer Peripheral Systems
Note: All courses in Semester 6 are taught at Seneca College in Toronto.

Summer Semester

COOP*2000 [0.00] Co-op Work Term II

Fall Semester

COOP*3000 [0.00] Co-op Work Term III

Semester 7 - Winter

PHYS*2450 [0.75] Mechanics II
PHYS*2470 [0.75] Electricity and Magnetism II
PHYS*3220 [0.50] Waves and Optics
One of:
CIS*3120 [0.50] Digital Systems
0.50 elective
0.50 elective

Summer Semester

COOP*4000 [0.00] Co-op Work Term IV

Semester 8 - Fall

MATH*3100 [0.50] Differential Equations II
PHYS*3230 [0.50] Quantum Mechanics I
PHYS*4240 [0.50] Statistical Physics II
PHYS*4500 [0.50] Advanced Physics Laboratory
0.50 elective

Note: At least 0.50 in electives must be taken from courses in the Arts or Social Sciences.